Charles Darwin University

Final Examination

Family Name						
Given Name/s						
Student Number						
Teaching Period	Semester 2, 2018					

QAB105 – Quantitative Analysis for Business	DURATION	
	Reading Time:	10 minutes
	Writing Time:	180 minutes

INSTRUCTIONS TO CANDIDATES

Section A: 20 Multiple Choice Questions	Marks: 10	Time suggested: 50 minutes
Section B: 3 Short Answer Questions	Marks: 30	Time suggested: 90 minutes
Section C: 1 Structured Question	Marks: 10	Time suggested: 40 minutes

EXAM CONDITIONS

You may begin writing from the commencement of the examination session. The reading time indicated above is provided as a guide only.

This is a RESTRICTED OPEN BOOK examination

Any non-programmable calculator is permitted

No handwritten notes are permitted

Any hard copy, unannotated English dictionary is permitted

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
No additional printed material is permitted	1 x 5-Multiple Choice Answer Sheet 1 x Scrap Paper Formula Sheet/s Statistical Table/s

Part A	Part B: Q1	Part B: Q2	Part B: Q3	Part B: Q4	Part C: Q1	Total

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Section B

Short Answer Questions

Total marks for this section: 30

Suggested time allocation for this Section: 90 minutes

Answer Any Three (3) Questions out of Four Questions

This section should be answered in the space given in the Exam Paper.
Marks for each question are indicated.

QUESTION 1 ***[10 marks]***

A. The number of hours a college student spent studying during the final exam week was recorded as follows:

7 6 4 12 8 5 7

(i) Calculate the **mean** of the sample data.

Answer: Working

(ii) Calculate the **median** of the sample data.

Answer: Working

QUESTION 1 (continues on next page)

(iii) Calculate the **mode** of the sample data.

Answer: Working

(iv) Calculate the **standard deviation** of the sample data.

Answer: Working

(v) Calculate the **coefficient of variation**.

Answer: Working

B. The following table shows the frequency distribution constructed from data for the number of customers entering an electronics store during a 50-day period.

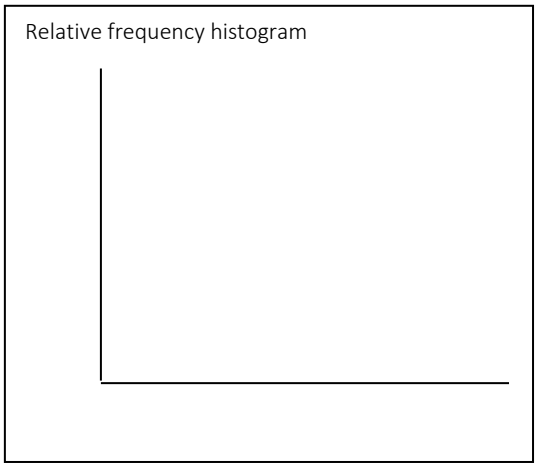
Frequency Distribution

Number of customers	Frequency
$40 \leq X < 50$	6
$50 \leq X < 60$	14
$60 \leq X < 70$	16
$70 \leq X < 80$	8
$80 \leq X < 90$	4
$90 \leq X < 100$	2
Total	50

QUESTION 1 (continues on next page)

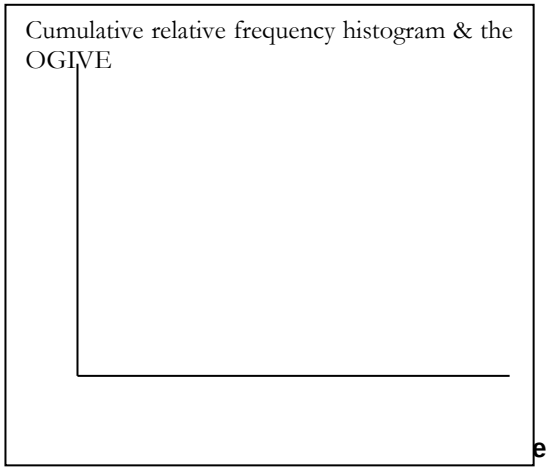
(i) Calculate the relative frequency distribution and show them in the following table. Construct a relative frequency histogram in the box below.

Number of customers	Relative Frequency
$40 \leq X < 50$	
$50 \leq X < 60$	
$60 \leq X < 70$	
$70 \leq X < 80$	
$80 \leq X < 90$	
$90 \leq X < 100$	
Total	



(ii) Calculate the cumulative relative frequency distribution and show them in the following table. Construct a cumulative relative frequency histogram and the 'ogive' in the box below.

Number of customers	Cumulative relative frequency
$40 \leq X < 50$	
$50 \leq X < 60$	
$60 \leq X < 70$	
$70 \leq X < 80$	
$80 \leq X < 90$	
$90 \leq X < 100$	



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QUESTION 2 [***10 marks]***

A company would like to estimate how much its employees pay in childcare costs per month in order to decide whether it would be worthwhile to provide a day-care centre in its building. The company was advised by a statistician that childcare cost per month historically follows a normal distribution. A random sample of 25 employees who use childcare services revealed that on average they paid $300 per month in childcare costs with a sample standard deviation equal to $10.00. Construct a 95% confidence interval estimate for the mean monthly childcare expenses. Use the following template to answer the question.

(i) Write down the parameter of interest, its point estimator and the associated sampling distribution (how do you know this?) which would be used for the estimation of the confidence interval.

Parameter of interest: _____
Point estimator: _____
Sampling distribution of the point estimator: _____

(ii) Specify the formula for the 95% confidence interval estimator for the parameter.

QUESTION 2 (continues on next page)

(iii) Perform the necessary calculations and write down the lower and upper limits of the 95% confidence interval.

Answer:

Lower limit = _____

Upper limit = _____

Working

(iv) Interpret the calculated confidence interval.

QUESTION 3 [10 marks]

A recent article reported that the average leisure time for males is less than 20 hours per week. A random sample of 30 men was selected and found to have a mean leisure time of 16.9 hours per week with a standard deviation of 6 hours per week. Use a 5 percent level of significance to test the validity of this claim.

Answer

Step 1. Statement of the hypotheses

H_0:

H_A:

QUESTION 3 (continues on next page)

Step 2. Test statistic and the standardised test statistic

Step 3. Level of significance

Step 4. Decision rule

Step 5. Computation of the value of the test statistic

Step 6. Conclusion

QUESTION 4 [10 marks]

The owner of a fruits and vegetables shop in Gold Coast recorded the price and the number of units sold of its four most popular items. These data were recorded for a Wednesday in October 2015 and 2016, as shown below.

	2015		2016	
Item	**Price ($)**	**Quantity (kg)**	**Price ($)**	**Quantity (kg)**
Oranges	1.50	25	1.20	30
Bananas	2.00	30	6.60	40
Potatoes	2.00	20	1.60	20
Carrots	1.00	10	1.10	15

(i) Calculate and interpret the Laspeyres Price index for 2015 with 2016 as the base year.

Calculation:

Interpretation:

(ii) Calculate and interpret the Paasche Price index for 2015 with 2016 as the base year.

Calculation:

Interpretation:

Structured Question

Total marks for this section: 10

Suggested time allocation for this Section: 40 minutes

Answer *ALL* Questions

This section should be answered in the space given in the Exam Paper.
Marks for each question are indicated.

QUESTION 1 [**10 marks**]

The following data were obtained in a study of the relationship between Fertilizer (kg/hectare) used and Crop yield ('000 kg/hectare) of 8 agricultural farms.

Farm	Fertilizer (kg/hectare) (X)	Crop yield ('000 kg/hectare) (Y)
A	220	36
B	450	72
C	250	48
D	320	51
E	500	80
F	250	40
G	330	55
H	430	72

A regression analysis of Y against X using Excel yielded the output below:

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9861
R Square	0.9723
Adjusted R Square	0.9677
Standard Error	2.9039
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1778.9049	1778.905	210.95756	6.67937E-06
Residual	6	50.5951	8.4325		
Total	7	1829.5			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	4.4293	3.7457	1.1825	0.2817	-4.7362	13.5947
Fertiliser	0.1522	0.0105	14.5244	0.0000	0.1266	0.1778

QUESTION 1 (continues on next page)

Use the EXCEL results above to answer the following questions.

(i) Write down the estimated regression line ($\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x$):

(ii) Interpret the intercept term $\hat{\beta}_0$ and the slope coefficient $\hat{\beta}_1$ of the regression line

(iii) What is the value of the crop yield in kilograms when the amount of fertilizer used is x =300kg/hectare?

(iv) What information does the slope coefficient provide about the relationship between Fertilizer and Crop Yield?

(v) Test whether there is a linear relationship (slope coefficient is different from 0) between the two variables at the 5% level of significance. (Use the Excel output). Perform the test using the following template:

1. Null hypothesis: H_o:

   Alternative hypothesis: H_A:

2. Test statistic and associated sampling distribution:

QUESTION 1 (continues on next page)

3. Level of significance: α =

4. Decision rule using p-value method:

5. Conclusion:

(vi) Find is the coefficient of determination (R-squared) and interpret it.

END OF EXAMINATION

Formula List

Summary Measures (n – sample size; N = Population size)

$$\mu = \frac{\sum_{i=1}^{N} x_i}{N} \qquad \bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

$$\sigma^2 = \frac{\sum_{i=1}^{N} (x_i - \mu)^2}{N} \qquad s^2 = \frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}$$

$$\sigma^2 = \frac{\sum_{i=1}^{N} x_i^2 - \frac{\left(\sum_{i=1}^{N} x_i\right)^2}{N}}{N} \qquad s^2 = \frac{\sum_{i=1}^{n} x_i^2 - \frac{\left(\sum_{i=1}^{n} x_i\right)^2}{n}}{n-1}$$

$$\sigma = \sqrt{\sigma^2} \qquad s = \sqrt{s^2}$$

$$\text{CV} = \frac{\text{Standard Deviation}}{\text{Mean}} \times 100\%$$

Location of the pth percentile: $L_p = (n+1)\frac{p}{100}$ IQR = Q_3-Q_1

$$s_{xy} = \frac{1}{n-1}\left(\sum x_i y_i - \frac{\sum x_i \sum y_i}{n}\right); \quad s_x^2 = \frac{1}{n-1}\left(\sum x_i^2 - \frac{\left(\sum x_i\right)^2}{n}\right); \quad s_y^2 = \frac{1}{n-1}\left(\sum y_i^2 - \frac{\left(\sum y_i\right)^2}{n}\right)$$

$$r = \frac{s_{xy}}{\sqrt{s_x^2 s_y^2}} \qquad \hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x; \qquad \hat{\beta}_1 = \frac{s_{xy}}{s_x^2}; \qquad \hat{\beta}_0 = \bar{y} - \hat{\beta}_1 \bar{x}$$

Probability distributions

Discrete Probability Distribution

$$\mu = E[X] = \sum_i x_i p_i, \quad \sigma^2 = V[X] = \sum_i (x_i - \mu)^2 p_i, \text{ or } \sigma^2 = V[X] = \sum_i x_i^2 p_i - \mu^2$$

Normal Distribution

$$Z = \frac{X - \mu}{\sigma}; \qquad E[\bar{X}] = \mu; \qquad V[\bar{X}] = \frac{\sigma^2}{n}$$

Confidence Intervals

Mean: $\bar{X} \pm z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$ $\bar{X} \pm t_{\alpha/2;\, n-1} \frac{s}{\sqrt{n}}$ $n = \frac{z_{\alpha/2}^2 \sigma^2}{B^2}$

Proportion: $\hat{p} \pm z_{\alpha/2} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$ *or* $\hat{p} \pm z_{\alpha/2} \sqrt{\frac{\hat{p}\hat{q}}{n}}$ $n = \frac{z_{\alpha/2}^2 pq}{B^2}$ *where* $q = 1 - p$

$\hat{p} = \frac{X}{n}$

Hypothesis Testing

Mean: $z = \frac{\bar{X} - \mu}{\sigma / \sqrt{n}}$ $t_{n-1} = \frac{\bar{X} - \mu}{s / \sqrt{n}}$

Proportion: $z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}}$ *where* $q = 1 - p$

Correlation Analysis and Simple Linear Regression Analysis

Sample regression line

$$\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x; \qquad \hat{\beta}_1 = \frac{s_{xy}}{s_x^2}; \qquad \hat{\beta}_0 = \bar{y} - \hat{\beta}_1 \bar{x}$$

SSE and Standard error of estimate

$$SSE = (n-1)\left[s_y^2 - \frac{s_{xy}^2}{s_x^2} \right] \qquad s_e^2 = \frac{SSE}{n-2} \quad or \quad s_e = \sqrt{\frac{SSE}{n-2}}$$

Standard error of the slope and intercept coefficient estimates

$$s_{\hat{\beta}_1} = \frac{s_\varepsilon}{\sqrt{(n-1)s_x^2}} \qquad s_{\hat{\beta}_o} = \sqrt{\frac{s_\varepsilon^2 \sum x_i^2 / n}{(n-1)s_x^2}}$$

Test statistic for the significance of the slope and intercept coefficients

$$t_{n-2} = \frac{\hat{\beta}_0 - \beta_0}{s_{\hat{\beta}_0}} \qquad t_{n-2} = \frac{\hat{\beta}_1 - \beta_1}{s_{\hat{\beta}_1}}$$

Coefficient of determination

$$R^2 = 1 - \frac{SSE}{SST} \qquad SST = (n-1)s_y^2 \qquad R^2 = r^2$$

Coefficient of Correlation

$$r = \sqrt{R^2}$$

Index Numbers

Laspeyres: $I_{1,0}^{LP} = \frac{\sum P_{1i} Q_{0i}}{\sum P_{0i} Q_{0i}} \times 100$ Paasche: $I_{1,0}^{PP} = \frac{\sum P_{1i} Q_{1i}}{\sum P_{0i} Q_{1i}} \times 100$

Statistical Tables

Normal Distribution

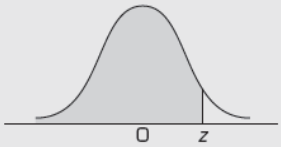
Table 3 Cumulative Standardised Normal Probabilities

$P(-\infty < Z < z)$

Z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
–3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010
–2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
–2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
–2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
–2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
–2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
–2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
–2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
–2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
–2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
–2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
–1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
–1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
–1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
–1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
–1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
–1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
–1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
–1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
–1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
–1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
–0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
–0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
–0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
–0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
–0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
–0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
–0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
–0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
–0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
–0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641

Normal Distribution (continued)

Table 3 Cumulative Standardised Normal Probabilities (Continued)

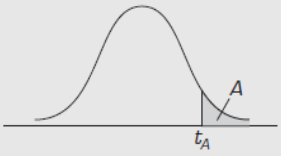


$P(-\infty < Z < z)$

Z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990

t Distribution

Table 4 Critical Values of the Student *t* Distribution



Degrees of freedom	$t_{0.100}$	$t_{0.050}$	$t_{0.025}$	$t_{0.010}$	$t_{0.005}$	Degrees of freedom	$t_{0.100}$	$t_{0.050}$	$t_{0.025}$	$t_{0.010}$	$t_{0.005}$
1	3.078	6.314	12.706	31.821	63.657	29	1.311	1.699	2.045	2.462	2.756
2	1.886	2.920	4.303	6.965	9.925	30	1.310	1.697	2.042	2.457	2.750
3	1.638	2.353	3.182	4.541	5.841	35	1.306	1.690	2.030	2.438	2.724
4	1.533	2.132	2.776	3.747	4.604	40	1.303	1.684	2.021	2.423	2.704
5	1.476	2.015	2.571	3.365	4.032	45	1.301	1.679	2.014	2.412	2.690
6	1.440	1.943	2.447	3.143	3.707	50	1.299	1.676	2.009	2.403	2.678
7	1.415	1.895	2.365	2.998	3.499	55	1.297	1.673	2.004	2.396	2.668
8	1.397	1.860	2.306	2.896	3.355	60	1.296	1.671	2.000	2.390	2.660
9	1.383	1.833	2.262	2.821	3.250	65	1.295	1.669	1.997	2.385	2.654
10	1.372	1.812	2.228	2.764	3.169	70	1.294	1.667	1.994	2.381	2.648
11	1.363	1.796	2.201	2.718	3.106	75	1.293	1.665	1.992	2.377	2.643
12	1.356	1.782	2.179	2.681	3.055	80	1.292	1.664	1.990	2.374	2.639
13	1.350	1.771	2.160	2.650	3.012	85	1.292	1.663	1.988	2.371	2.635
14	1.345	1.761	2.145	2.624	2.977	90	1.291	1.662	1.987	2.368	2.632
15	1.341	1.753	2.131	2.602	2.947	95	1.291	1.661	1.985	2.366	2.629
16	1.337	1.746	2.120	2.583	2.921	100	1.290	1.660	1.984	2.364	2.626
17	1.333	1.740	2.110	2.567	2.898	110	1.289	1.659	1.982	2.361	2.621
18	1.330	1.734	2.101	2.552	2.878	120	1.289	1.658	1.980	2.358	2.617
19	1.328	1.729	2.093	2.539	2.861	130	1.288	1.657	1.978	2.355	2.614
20	1.325	1.725	2.086	2.528	2.845	140	1.288	1.656	1.977	2.353	2.611
21	1.323	1.721	2.080	2.518	2.831	150	1.287	1.655	1.976	2.351	2.609
22	1.321	1.717	2.074	2.508	2.819	160	1.287	1.654	1.975	2.350	2.607
23	1.319	1.714	2.069	2.500	2.807	170	1.287	1.654	1.974	2.348	2.605
24	1.318	1.711	2.064	2.492	2.797	180	1.286	1.653	1.973	2.347	2.603
25	1.316	1.708	2.060	2.485	2.787	190	1.286	1.653	1.973	2.346	2.602
26	1.315	1.706	2.056	2.479	2.779	200	1.286	1.653	1.972	2.345	2.601
27	1.314	1.703	2.052	2.473	2.771	∞	1.282	1.645	1.960	2.326	2.576
28	1.313	1.701	2.048	2.467	2.763						